

## **Hersiliidae of Sudan (Araneida: Hersiliidae)**

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### **Abstract**

Two species of two genera of family Hersiliidae are recorded from Sudan, i.e., *Hersilia caudata* Savigny, 1825 and *Hersiliola eltigani* sp. n. It is the first record of genus *Hersiliola* in Sudan. A distribution map of the two species in Sudan is presented.

**Keywords:** *Hersilia caudata*, *Hersiliola eltigani*, Hersiliidae, Spiders, Sudan.

### **Introduction**

Family Hersiliidae Thorell, 1870 is one of the twenty families of spiders recorded from Sudan. It includes 168 species, of 15 genera, among 41253 spider species all over the world (Platnick, 2010; Marusik, et al., 2010) (Table 1). Only one hersiliid species is already recorded from Sudan, i.e. *Hersilia caudata* Savigny, 1825.

Benoit (1967) recorded *Hersilia caudata* and described a new species from Sudan (*Hersilia hirtiventris* = *H. caudata*). Foord (2005) discussed the systematics and distribution of the Hersiliidae of the Afrotropical region (Foord & Dippenaar-Schoeman, 2006). *H. caudata* is recorded from three localities in Sudan (Foord, 2005). On 6 August 2008, one juvenile *Hersilia* spider was found among plants in the campus of Shendi University, 16°40'39.7"N, 33°25'17.9"E, Alt. 367m.

Four *Hersiliola* specimens, 1♀, 2s♂, 1j, were collected from Sudan. They were found under stones at Kordufan Mountain's versant, 13°04'25.9"N, 30°20'51.3"E, Alt. 606m, on 30 July 2008. One subadult male was kept alive and reared to moult on 17-18 August 2008 to be adult. It was preserved on 19 August 2008. In this region, I saw a hare, a pair of birds among *Acacia* trees, plenty of butterflies, and a limbless lizard (Malaga is its vernacular name there). There were several kinds of insects, i.e., wasps, beetles, lepidopteran larvae, hemipteran and neuropteran nymphs, in addition to chilopods,

*Compsobuthus* scorpions, *Biton* and *Galeodes* sun-spiders (solpugids), and spiders of nine families.

The distribution of the two hersiliid species of Sudan is plotted on a map.

Abbreviations used: C = cephalothorax; Et = tip of embolus; L = length; Te = tegular apophysis; TL = total length; W = width. All measurements are in millimetres.

Table 1. Genera of Hersiliidae, their geographic range and number of described species.

South America	Mediterranean	Africa	Asia	Australia		
Iviraiva [2]	Tama [1]	Prima [1] Tyrotama [8]	Deltshevia [2] Duninia [2] Ovtsharenkoia [1] Promurricia [1]	Tamopsis [50]		
Yabisi [2]			Hersilia [72]			
Ypypuera [3]			Hersiliola [10]			
		Murricia [4]				
Neotama [9]						

[ ] = number of species

## Systematics

### Family **Hersiliidae** Thorell, 1870 “Long-spinnered spiders”

**Diagnosis:** Small to medium sized (5-10 mm) araneomorph spiders; ecribellate; entelegyne; legs with three tarsal claws; carapace ovoid, flattened, with eight eyes on a large tubercle; posterior spinnerets long and slender with apical segment strongly tapering (Jocqué & Dippenaar-Schoeman, 2006).

**Distribution:** In the tropical, subtropical, and temperate regions.

**Lifestyle:** Hersiliids have diverse lifestyles, ranging from wandering tree-trunk-dwellers [e.g. *Hersilia*] to ground-dwelling web-builders [e.g. *Hersiliola*]. The hunters run around their prey while producing a band of silk to ensnare them. The webs on the ground are very peculiar curtains hanging under rocks and enclosing pebbles (Jocqué & Dippenaar-Schoeman, 2006).

#### Key to the genera of Hersiliidae recorded from Sudan (Adopted from Foord, 2005)

- Metatarsi biarticulate in legs I, II, and IV; leg I longest; leg III about 0.3 times leg I. Chelicerae armed; posterior lateral spinnerets > carapace width; thoracic region of carapace dorso-ventrally flattened. .... *Hersilia*
- Metatarsi uniarticulate; leg IV (or II) longest; leg III > 0.5 times leg I. Chelicerae unarmed; posterior lateral spinnerets < carapace width; thoracic region of carapace sloping. .... *Hersiliola*

#### Genus ***Hersilia*** Savigny, 1825

There are 72 species of genus *Hersilia* recorded from Africa, Yemen, Socotra, Asia, and Australia (Platnick, 2010); 28 species of them are African. Savigny described genus *Hersilia* and *Hersilia caudata* from Egypt in a work accomplished by Audouin (1825) [El-Hennawy, 2000]. *Hersilia caudata* is recorded from Cape Verde Island, West Africa to China (Platnick, 2010).

***Hersilia caudata*** Savigny, 1825 Figs. 1-4.

*H. c.* Audouin, 1825: 115, pl. 1, f. 8 (♀).

*H. c.* Audouin, 1827: 318, pl. 1, f. 8 (♀).

*H. c.* O. P.-Cambridge, 1876: 560-562, pl. 58, f. 6 (j).

*H. diversa* O. P.-Cambridge, 1876: 561 (j).

*H. hirtiventris* Benoit, 1967: 23, f. 6-7 (♀).

*H. c.* Benoit, 1967: 34, f. 37, 40, 44 (♂♀).

*H. c.* Rheims, Brescovit & van Harten, 2004: 336-340, f. 1-3, 7-15 (♂♀).

*H. c.* Foord, 2005: 81-84, f. 9, 26b, 33 (♂♀).

*H. c.* Foord & Dippenaar-Schoeman, 2006: 59, f. 132-138, 200 (♂♀).

World Distribution: Middle East (Egypt, Palestine-Israel), Africa (Benin, Burkina Faso, Cape Verde Islands, Cameroon, Chad, Guinea, Ivory Coast, Mali, Nigeria, Senegal, Somalia, Sudan, Togo), Asia (Yemen, Socotra, China?), and Australia.

Distribution in Sudan (Fig. 4):

- Kawa (13°43'N, 32°30'E), 200 km south of Khartoum, 1♀, 2.xii.1961, J.L. Cloudsley-Thompson, MRAC 120872 [MRAC = Musée Royal de l'Afrique Centrale, Tervuren, Belgium]
- Reuk (10°45'N, 32°50'E), 1♀, 4.xii.1961, J.L. Cloudsley-Thompson, MRAC 120833
- Bahr-el-Ghazal, Rumbek (6°47'N, 29°40'E), 1 juv. male, 11.iii.1964, G. Lewis, MRAC 126486
- Shendi (16°40'39.7"N, 33°25'17.9"E, Alt. 367m), 1 juv., 6.viii.2008, among plants in the campus of Shendi University.

Description. [Redescribed in detail by Foord (2005)]

O. P.-Cambridge (1876: 561-562) described *Hersilia caudata* and proposed a new name to his immature specimens of Cairo. He said: "The following description of the examples I met with may perhaps call the attention of araneologists to the differences noted; and possibly the true *H. caudata* may eventually prove to be a distinct species, in which case I would propose for that now described the name *Hersilia diversa*.

The length of the largest immature female captured is rather over 3½ lines [= 7.4 mm]. The colour of the cephalothorax is a deep blackish brown, rather the palest along the middle line, on the hinder slope, and a little above the lateral margins; the upper part of the caput is black, with a short brightish orange-yellow longitudinal streak on the hinder part between the eyes of the hind central pair. The clypeus (which equals in height two thirds of that of the facial space) is orange-yellow above and dull yellow on its lower part, the middle of which has a short longitudinal white streak with a blackish patch on each side of it. This arrangement of colours gives a very distinct and diversified appearance to the "facies," and appears to be pretty well defined in all the examples met with (*vide* fig. 6 b).

The legs are of a dull yellowish hue, marked and broadly annulated with yellow and blackish-brown; these markings form a broken longitudinal line of deepish black-brown on the fore sides of the femoral joints. The *palpi* are similar to the legs in colour, and marked with black-brown on their upper or fore sides.

The *abdomen* is of a dull yellowish brown above, thickly punctuated with pale yellowish points mixed with a few blackish spots here and there, chiefly near the cephalothorax, the lateral margins of the upperside of the abdomen are very distinctly defined by the inner edge of the black markings on the sides; this well-defined edge is denticulate or strongly crenellated; along the middle line of the fore half is a strong and very distinct black longitudinal marking, denticulate or irregularly jagged on its edges;

this marking is broadest near its middle, and comes to a blunt point about two thirds of the distance from the cephalothorax to the spinners, and is followed by some broken angular bars, or chevrons, which decrease in length towards the hinder extremity of the abdomen, in addition to the above markings, there are four pale transverse wavy lines, which cross the whole of the upperside of the abdomen, the two foremost, however, being interrupted by the longitudinal black marking; the sides of the abdomen are marked, but not regularly, with blackish brown spots and small markings, some of them assuming an oblique direction; but none of the lateral markings extend far down towards the underside, which is (as are also the sternum, maxillae, and labium) of a plain yellowish hue devoid of markings. The long spinners of the superior pair are dull yellow faintly marked or annulated with yellowish brown, or sometimes with brownish black. .... in fact I saw, and captured, only females, and all those immature."

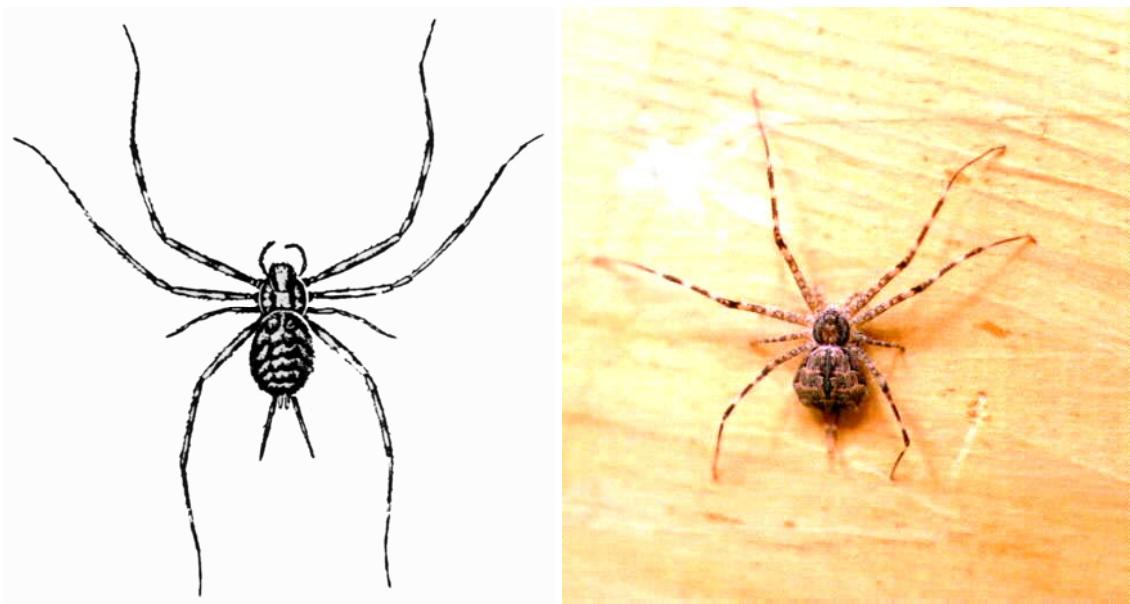


Fig. 1. *Hersilia caudata* Savigny, 1825 ♀.  
A. Drawing by Savigny in Audouin (1825), pl. 1, fig. 8, near Cairo.  
B. Photograph, Sohag, Upper Egypt.



Fig. 2. *Hersilia caudata* (?) immature, Shendi. Habitus, postero-dorsal view.

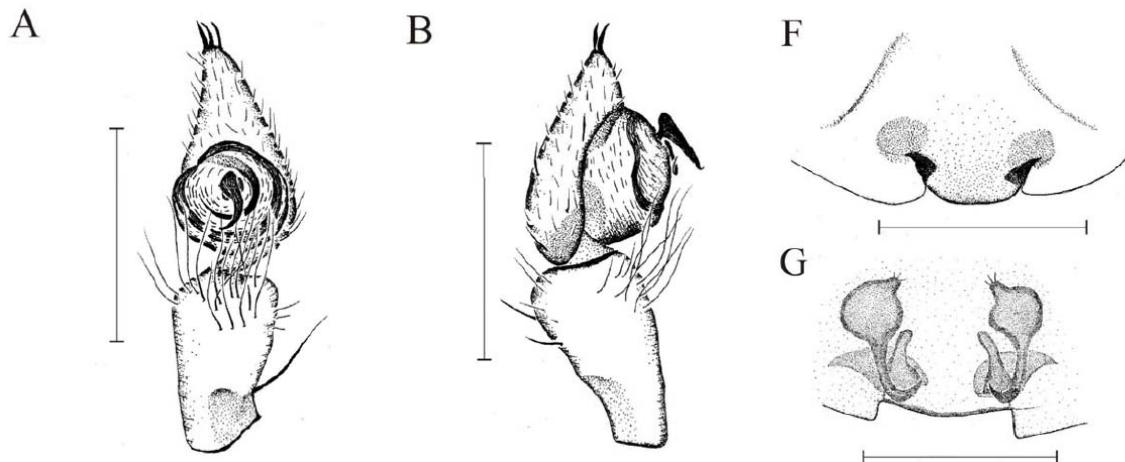


Fig. 3. *Hersilia caudata*: Male, left palp: A. ventral view, B. prolateral view.  
Female: F. epigyne, ventral view, G. vulvae, dorsal view.  
After Foord (2005, Chapter 2, Figure 9)



Fig. 4. Distribution map of *Hersilia* and *Hersiliola* species of Sudan.  
 1 = Shendi ( $16^{\circ}40'39.7''N$ ,  $33^{\circ}25'17.9''E$ )  
 2 = Kawa ( $13^{\circ}43'N$ ,  $32^{\circ}30'E$ ), 200 km south of Khartoum  
 3 = Reuk ( $10^{\circ}45'N$ ,  $32^{\circ}50'E$ )  
 4 = Bahr-el-Ghazal, Rumbek ( $06^{\circ}47'N$ ,  $29^{\circ}40'E$ )  
 5 = Kordufan Mountain ( $13^{\circ}04'25.9''N$ ,  $30^{\circ}20'51.3''E$ )  
 ● = *Hersilia caudata*, ■ = *Hersiliola eltigani* sp. n.

Genus *Hersiliola* Thorell, 1870

There are 10 species of genus *Hersiliola* recorded from Mediterranean countries, Asia (Afghanistan, Iran, Turkey, Turkmenistan, Uzbekistan, China), and Africa (Mali, Nigeria, Cape Verde Is.) (Platnick, 2010; Marusik, *et al.*, 2010).

**Diagnosis.** [Modified after Marusik & Fet (2009)] *Hersiliola* can be easily distinguished from other hersiliid genera by short spinnerets (shorter than abdomen length) and the shape of copulatory organs: a digitate cymbium; flattened bulb of the male palp [= discoid tegulum]; a small, hook-like, median tegular apophysis perpendicular to the axis of the palp; a filiform, elongate, spirally coiled embolus; elongate insemination ducts coiled around fertilization ducts and uncoiled upper loop; small [relatively smaller] seminal receptacles. [Redescribed in detail by Foord and Dippenaar-Schoeman (2005)]



Figs. 5-9. *Hersiliola eltigani* sp.n. 5-6. Habitus, dorsal view. 5. Male, alive. 6. Juvenile. 7-9. Female. 7-8. Dorsal view. 7. Carapace. 8. Abdomen. 9. Ventral view.

***Hersiliola eltigani* sp.n.** Figs. 4, 5-14.

*H. macullulata* Foord & Dippenaar-Schoeman, 2005: 259-261, f. 2A-2E ( $\sigma$  only, misidentified).

**Material examined:** Holotype  $\sigma$  (s $\sigma$ ) was kept alive and reared to moult on 17-18 August 2008 to be adult), Paratypes 1 $\varphi$ , 1s $\sigma$ , 1j, under stones, on 30 July 2008, Kordufan Mountain's versant ( $13^{\circ}04'25.9''N$ ,  $30^{\circ}20'51.3''E$ , Alt. 606m), deposited in the Arachnid Collection of Egypt (ACE 20080730.1-4).

**Etymology.** The specific name is a patronym in honour of Prof. Dr. El-Tigani M. H. Allam, El-Khartoum, Sudan, who invited me to visit Sudan, to discover this new species.

**Diagnosis.** The male of *Hersiliola eltigani* sp.n. is most similar to *Hersiliola macullulata* (Dufour, 1831), from which it can be distinguished by the shape of the tegular apophysis which is sharply pointed and the position of the embolic base at about 4 o'clock. The female of *H. eltigani* sp.n. differs by an epigynum with a septum thinner than height of epigynal median plate.

### Description

Colouration: *Male*: carapace pale yellowish brown, abdomen pale reddish brown (Fig. 5); *Female*: carapace reddish brown, abdomen more brownish (Figs. 7-8); *Juvenile*: carapace pale yellowish brown, lighter than male, abdomen lighter than carapace (Fig. 6). Carapace outer margin black. Both carapace and abdomen mottled with grey-brown patches. Abdomen with dorsal rhomboidal pattern. No mottling beneath (Fig. 9). Legs with wide annulations, faint in female and juvenile, very dark in male.

**Male (Holotype).** TL 3.50; Cephalothorax: L 1.59, W 1.75 (CL/CW 0.91); Sternum L 0.79; Abdomen: L 1.91, W 1.48. Legs measurements: Table (2).

Relative length of legs 85 : 91 : 52 : 100. Leg formula IV-II-I-III.

Table 2:  $\sigma$ , Legs measurements (mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total length
I	2.33	0.74	1.91	2.28	1.17	8.43
II	2.38	0.69	2.28	2.54	1.11	9.00
III	1.48	0.53	1.17	1.32	0.69	5.19
IV	2.65	0.58	2.60	3.07	1.01	9.91

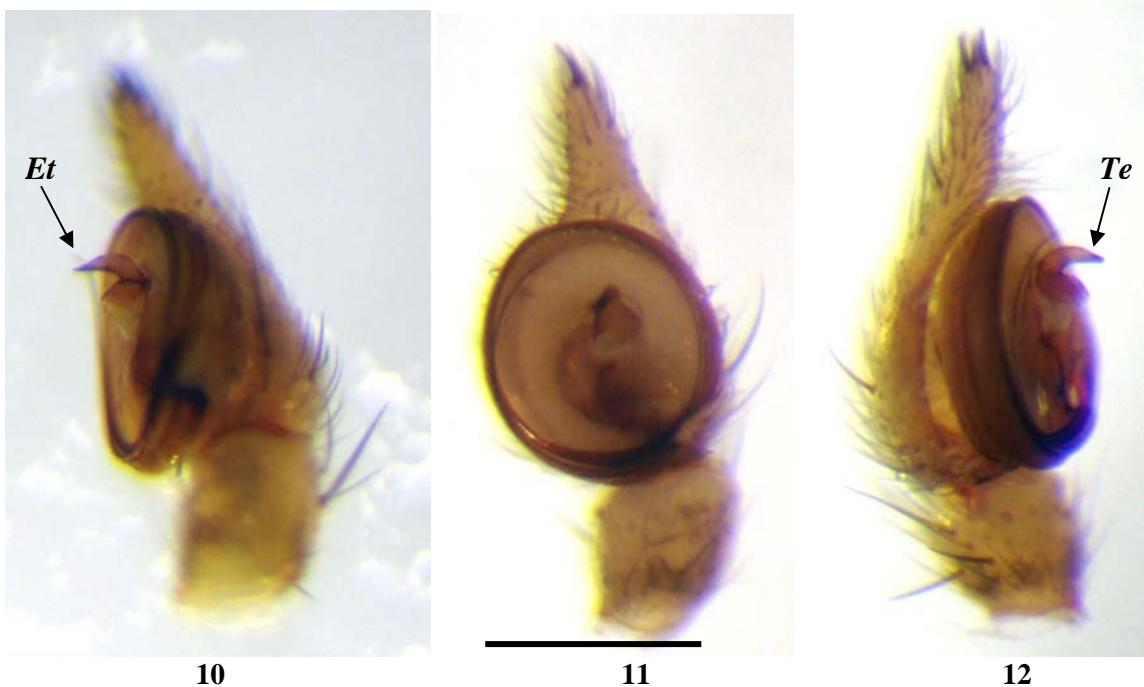
Pedipalp: cymbium L 1.06, tegulum diameter 0.53; embolus with about 1.5 coils; embolic base at about 4 o'clock; tegular apophysis sharply pointed; tip of cymbium is shorter than the diameter of the tegulum (Figs. 10-12).

**Female (Paratype).** TL 3.97; Cephalothorax: L 1.59, W 1.64 (CL/CW 0.97); Sternum L 0.79; Abdomen: L 2.38, W 1.85. Legs measurements: Table (3).

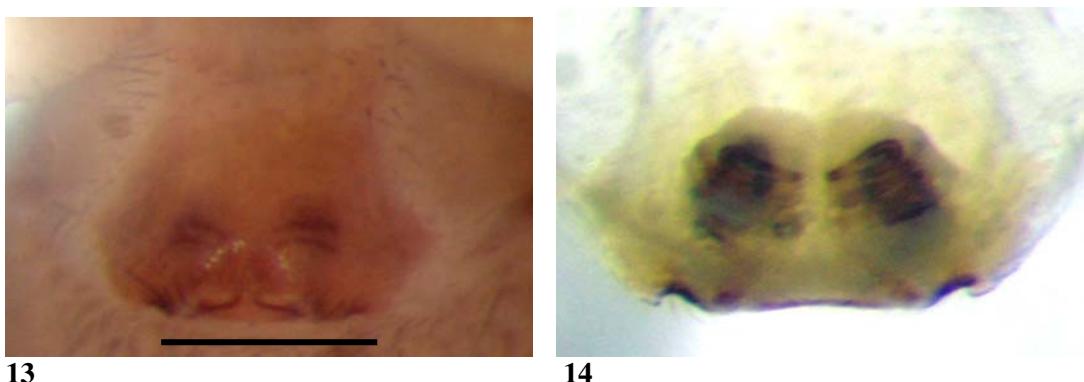
Relative length of legs 98 : 104 : 57 : 100. Leg formula II-IV-I-III.

Table 3:  $\varphi$ , Legs measurements (mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total length
I	2.17	0.58	1.70	1.85	0.95	7.25
II	2.23	0.64	1.85	2.07	0.95	7.74
III	1.43	0.42	0.64	1.11	0.64	4.24
IV	2.12	0.53	2.07	2.07	0.64	7.43



Figs. 10-12. *Hersiliola eltigani* sp.n. Male palp. 10. Retrolateral view. 11. Ventral view. 12. Prolateral view. Scale = 0.5 mm.



Figs. 13-14. *Hersiliola eltigani* sp.n. Female. 13. Epigynum, ventral view. 14. Vulvae, dorsal view. Scale = 0.5 mm.

Epigynum with a distinct median plate and windows; septum thinner than median plate height of epigynal plate; insemination duct with almost five coils around fertilization duct (Figs. 13-14).

World Distribution: Sudan and Burkina Faso.

Distribution in Sudan (Fig. 4): Kordufan Mountain's versant ( $13^{\circ}04'25.9''N$ ,  $30^{\circ}20'51.3''E$ , Alt. 606m).

**Comment.** Foord & Dippenaar-Schoeman (2005) described *Hersiliola macullulata* (Dufour, 1831) depending on males from Burkina Faso (MRAC 172.521, 207.790, 207.791). Those male specimens were misidentified. They are similar to the Sudanese male described here as *Hersiliola eltigani* sp.n. The female of *H. eltigani* is different from both *H. macullulata* and *H. versicolor* (Blackwall, 1865) of Cape Verde Islands.

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